10th Class 2016

Biology	Group-I	Paper-II
Time: 2.45 Hours	(Subjective Type)	Max. Marks: 63

(Part-I)

2. Write short answers to any Six (6) questions: 12

(i) Define Bronchitis.

Ans Bronchitis is the inflammation of the bronchi or bronchioles. It results in excessive secretions of mucus into the tubes, leading to the swelling of tubular walls and narrowing of tubes. It is caused by viruses, bacteria or exposure to chemical irritants, *e.g.,* tobacco smoke.

(ii) How will you differentiate between a stoma and lenticel?

Ans Microscopic pores in the epidermis of leaf are known as stoma, which is the passageway for gases and water vapours. While lenticels are the pores in the layer of bark in woody stems for the exchange of gases.

(iii) Write the symptoms of asthma.

Ans The symptoms of asthma vary from person to person. The major symptoms include shortness of breath, wheezing, cough and chest tightness.

(iv) What is arthritis?

Ans Arthritis means "inflammation in joints". It is also very common in old age and in women. It is characterised by pain and stiffness in joints.

(v) Define bone with example.

Ans Bone is the hardest connective tissue in body. Bones not only move, support and protect the various parts of the body but also produce red and white blood cells and store minerals.

(vi) Define the antagonists muscles.

Ans Skeletal muscles are usually in pairs of 'antagonists'. In an antagonistic pair, both the muscles do opposite jobs *i.e.,* When one muscle contracts the other muscle relaxes.

(vii) **What is meant by community?**

Ans All the populations that live in a habitat and interact in different ways with one another is called as community.

(viii) **Write the name of Abiotic and Biotic components of Ecosystem.**

Ans **Abiotic components:**

Light, air, water, soil and the basic elements and compounds.

Biotic components:

Producers, consumers and decomposers.

(ix) **Define food chain and give an example of a simple food chain.**

Ans The series of organisms in an ecosystem, in which an organism eats the preceding one and is eaten by the next one. For example;

Grass → Grasshopper → Sparrow → Hawk

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3. Write short answers to any Five (5) questions: 10

(i) **What is lithotripsy?**

Ans Lithotripsy is the treatment for removing kidney stones. Non-electrical shock waves are bombarded on the stones to break them.

(ii) **What are the main organs work for homeostasis in man? Explain.**

Ans 1. Lungs 2. Skin 3. Kidney

(iii) **Write down the names of four organs of urinary system.**

Ans
1. One pair of kidneys
2. A pair of ureters
3. A urinary bladder
4. A Urethra

(iv) **What is meant by dormancy?**

Ans Dormancy is a period in an organism's life when growth, development and physical activity are temporarily stopped.

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(v) Define multiple fission.

Ans A method of asexual reproduction used by many unicellular organisms is called multiple fission. Some unicellular organisms (*e.g.*, Amoebae) form hard walls called cysts around them, under unfavourable conditions. When favourable conditions return, the nucleus of parent divides into many daughter nuclei by repeated divisions. This is followed by the division of cytoplasm into several parts. Each new part of cytoplasm encloses one nucleus. So a number of daughter cells are formed from a single parent at the same time. This kind of fission is known as multiple fission.

(vi) What is continuous fermentation?

Ans The fermentation in which substrate is added to the fermenter continuously, at a fixed rate is called continuous fermentation.

(vii) Define single cell protein.

Ans The protein content extracted from pure or mixed cultures of algae, yeasts, fungi or bacteria, the micro-organisms grown in fermenters where they produce a high yield of protein, called single cell protein.

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(viii) What is Beta-endorphin? What is the function?

Ans Beta-endorphin is a pain killer produced by the brain, has also been produced by genetic engineering techniques.

4. Write short answers to any Five (5) questions: 10

(i) What is meant by receptors? Give examples.

Ans The organs, tissues or cells which are specially built to detect a particular type of stimuli are called receptors. For example, sound waves are detected by ears, light is detected by eyes, chemicals in air are detected by nose and so on.

(ii) Compare exocrine glands and endocrine glands.

Ans Endocrine gland is a ductless gland; produces and secretes hormones while exocrine gland is a gland that discharges its secretion into a duct.

(iii) Define transcription and translation.

Ans The specific sequence of DNA nucleotides is copied in the form of messenger RNA (mRNA) nucleotides. This process is called transcription. The mRNA carries the sequence of its nucleotides to ribosome. The ribosome reads this sequence and joins specific amino acids, according to it, to form protein. This step is known as translation.

(iv) What is meant by nucleosomes?

Ans The structures formed by the wrapping of DNA around histone proteins is called nucleosomes.

(v) What is "Punnet Square"?

Ans The "Punnet Square" is a diagram that is used to predict an outcome of a particular cross or breeding experiment.

(vi) What is difference between analgesic and antibiotic?

Ans Analgesics are those medicines which reduce pain, *e.g.*, aspirin, paracetamol, etc. While antibiotics are those medicines which inhibit or kill bacteria and treat bacterial infections, *e.g.*, tetracycline, cephalosporine, etc.

(vii) What is meant by "Social Stigma"?

Ans "Social Stigma" is the extreme disapproval of a person or group on socially characteristic grounds that are perceived, and serve to distinguish them, from other members of a society.

(viii) What are Hallucinogens?

Ans Hallucinogens are the drugs that cause changes in perception, thought, emotion and conscious

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(Part-II)

NOTE: Attempt any Three (3) questions.

Q.5.(a) What is Pneumonia? Describe its symptoms and causes. (4)

Ans For Answer see Paper 2015, (Group-II), Q.5.(a).

(b) What steps are involved in the formation of urine in the kidney? (3)

Ans **Functions of Kidney:**

Urine formation is the main function of kidney. It occurs in three steps. *Firstly*, the blood enters into the kidney via renal artery. Then it goes to glomerulus. Since the pressure of the blood is very high. So most salts, water, etc. is filtered out the glomerular capillaries. This is called as 'glomerular filtrate' and passed to Bowman's capsule. *Secondly*, the selective re-absorption takes place. The glomerular filtrate is reabsorbed into the blood capillaries by osmosis, diffusion and active transport. Some water and most of the glucose is reabsorbed from the proximal convoluted tubule. The descending limb of the loop of henle allows the reabsorption of water while the ascending limb of loop of henle allows the reabsorption of salts. *Thirdly*, different ions, creatinine, urea, etc. are secreted from the blood into the filtrate in renal tubule. This filtrate is called as urine.

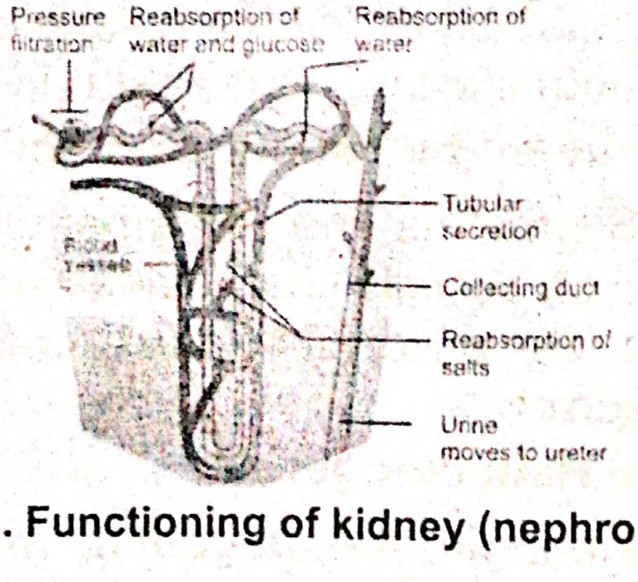
Pressure filtration
Reabsorption of water and glucose
Reabsorption of water
Tubular secretion
Blood vessel
Collecting duct
Reabsorption of salts
Urine moves to ureter

Fig. Functioning of kidney (nephron).

The urine moves into the collecting duct and then into the pelvis. Moreover, the kidneys also play role in osmoregulation by regulating the water content of the blood.

Q.6.(a) Describe the structure and function of thyroid gland and pancreas. (4)

Ans **Thyroid Gland:**

Thyroid glands are found in the neck region below larynx. It produces a hormone 'thyroxin'. Iodine is required for the production of this hormone. If a person lacks iodine in diet, thyroid gland cannot make its hormone. Hence the thyroid gland is enlarged. This disease is called as 'goiter'. Thyroxin increases the breakdown of food and release of energy in the body. It is also responsible for the growth of the body. If thyroxin is produced in less quantity, 'hypothyroidism' is caused. Hence, low energy is produced in the body and the heartbeat is slowed down. Hyperthyroidism is caused by the overproduction of thyroxin. The important symptoms of this disease are the increase in energy production; increased heartbeat, frequent sweating and shivering of hands. Thyroid glands also produce another hormone 'calcitonin'. It decreases the level of calcium ions in the blood and promotes the absorption of calcium from blood into the bones.

Pancreas:

Pancreas has two functions. The major part of pancreas is a ducted gland. This portion secretes digestive enzymes, through a duct, into the small intestine. Some portions of pancreas serve as ductless gland. This portion contains groups of endocrine cells referred to as islets of Langerhans. These islets secrete two hormones, i.e., insulin and glucagons.

Glucagon influences the liver to release glucose in blood and so the blood glucose concentration rises. Insulin influences the liver to take excess glucose from blood and so the blood glucose concentration falls.

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(b) Explain three types of joints. (3)

Ans For Answer see Paper 2014, (Group-I), Q.6.(b).

Q.7.(a) Describe the types of seed germination, also describe the conditions for the germination of seed. (4)

Ans **Germination:**

Seed germination is a process by which a seed embryo develops into a seedling. During germination, embryo soaks up water which causes it to swell, splitting the seed coat.

Root is the first structure that emerges from the radicle present in seed. It grows rapidly and absorbs water and nutrients from soil. In the next phase, plumule develops into tiny shoot which elongates and comes out of soil.

On the basis of the elongation of hypocotyl and epicotyl, there are two types of germination:

(i) Epigeal germination:

In epigeal germination, the hypocotyl elongates and forms a hook, pulling the cotyledons above ground. Beans, cotton and papaya are the examples of seeds that germinate this way.

(ii) Hypogeal germination:

In hypogeal germination, the epicotyl elongates and forms the hook. In this germination, the cotyledons stay underground. Pea, maize and coconut germinate this way.

Conditions for Seed Germination:

Seed germination depends on both internal and external conditions. The internal conditions include a living embryo and sufficient food storage. The most important external conditions include water, oxygen and favourable temperatures.

(b) Describe the advantages and disadvantages of the vegetative propagation in plants. **(3)**

Ans For Answer see Paper 2014, (Group-II), Q.7.(b).

Q.8.(a) Explain artificial selection. **(4)**

Ans For Answer see Paper 2014, (Group-II) Q.8.(a).

(b) What is parasitism? Explain its two types with examples. **(3)**

Ans Parasitism is a type of symbiosis in which one organism gets benefit from the other and harms it. The organism which lives on the other organism is called as 'parasite'. While the organism which supports the parasite is called as 'host'. Parasites are of two types *i.e.*, ectoparasites and endoparasites. The ectoparasites live on the external surface of the host's body *e.g.*, leech, cuscuta. While the parasites living within the host's body are called as endoparasites *e.g.*, Ascaris, entamoeba, etc.

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Q.9.(a) Write a note on application of fermentation. **(4)**

Ans For Answer see Paper 2013, (Group-II), Q.9.(a).

(b) Describe drug addiction and associated problems. **(3)**

Ans For Answer see Paper 2013, (Group-II), Q.9.(b).

(Part-III)

(Practical Part)

Note: Attempt any TWO (2) questions.

A-(i) Write down the procedure of experiment to show the presence of tar in cigarette smoke. **(3)**

Ans For Answer see Paper 2015, (Group-I), Q.A-(i).

(ii) Draw the diagram of the experimental apparatus measuring the inhaled and the exhaled air. (2)

Ans

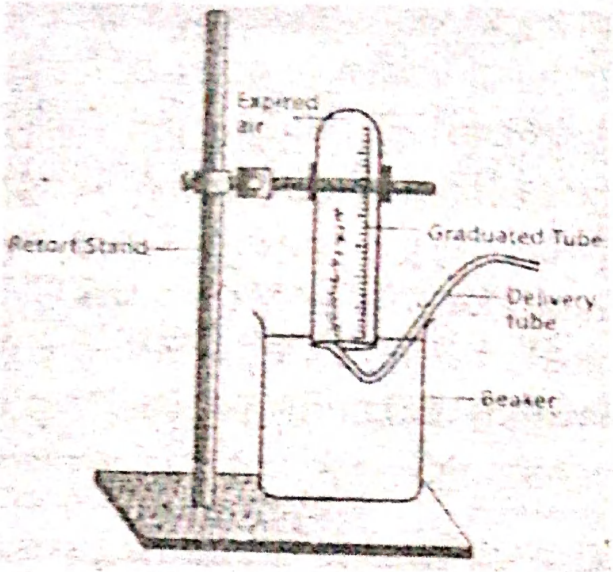

Fig. Measuring of the inhaled and the exhaled air.

B-(i) You performed experiment to investigate chemical composition of bone. Write procedure for this experiment. (3)

Ans **Materials:**

Three pieces of rib bone of lamb, NaOH, dilute HCl, water, forceps, beakers.

Procedure:

Take three beakers of equal size and label them as A, B and C. Put a piece of bone in each of them. Fill the beakers with one-fifth volumes of (A) NaOH, (B) dilute HCl and (C) water. Observe changes in the bone structure after an hour. After leaving the apparatus for many days, observe the changes in the structure of the bone.

(ii) Draw the labeled diagram of onion bulb. (2)

Ans For Answer see Paper 2014, (Group-I), Q.C-(i).

C-(i) Write the procedure of experiment to show the necessity of oxygen for seed germination. (3)

Ans **Materials:**

Petri-dishes, beakers, cotton wool, gram bean / pea / wheat seeds, refrigerator, incubator.

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Procedure:

Label the three Petri-dishes as I, II, III. Put a layer of cotton wool at the bottom of each dish. Place 4-5 seeds in petri dish I on moist cotton wool. Similarly, place 4-5 soaked seeds in petri-dish II, but keep the cotton wool dry and place 4-5 unsoaked seeds of gram in petri-dish III on dry cotton wool. Leave the petri-dishes for a few days and after that check the observations.

(ii) **Define biotic and abiotic components of an ecosystem.** **(2)**

Ans **Biotic Components:**

The living components of the environment are called biotic components, *i.e.,* producers, consumers and decomposers.

Abiotic Components:

The non-living components of the environment are known as abiotic components, *e.g.,* water, sunlight, soil, heat, etc.

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